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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/581,818      | 06/19/2000  | YOSHIHIRO SAKAI      | 000754              | 6723             |

23850 7590 06/27/2003

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EXAMINER

KAO, CHIH CHENG G

ART UNIT PAPER NUMBER

2882

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/581,818

Applicant(s)

SAKAI ET AL.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2 and 5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2 and 5 is/are rejected.
- 7) ☒ Claim(s) 2 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |                                                                                              |                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:                                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 2 and 5 are objected to because of the following informalities with regards to lack of antecedent basis problems, which appear to be minor draft errors: (claim 2, line 13, "the other phase"), (claim 2, line 14, "said groups"), (claim 5, line 13, "the other phase"), and (claim 5, line 14, "said groups").

These objections may be obviated by using the following respective suggested corrections: (claim 2, line 13, replace "the other" with - -another- -), (claim 2, line 14, delete "said"), (claim 5, line 13, replace "the other " with - -another- -), and (claim 5, line 14, delete "said").

For purposes of examination, the claims will be treated as such. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Citizen (JP 4-120322) in view of Takagi et al. (US Patent 5073710), Okutani et al. (US Patent 5,091,643), and Kuwahara et al. (US Patent 4680466).

Art Unit: 2882

Citizen discloses a plurality of light receiving windows or portions wherein the length of the windows or portions in the radial direction is set so as to gradually become shorter from the inner to outer peripheral side; and the opening area at the inner side is set to equal to that at the outer side (Fig. 1).

However, Citizen does not disclose a rotary encoder with a rotary disk receiving light from a light emitting element to send to a light receiving element, wherein a fixed slit is disposed between the rotary disk and light receiving element so that a plurality of windows or portions is disposed to have a phase difference at different positions in the radial direction of the disk. Citizen does not further disclose the light receiving windows or portions as a group of a plurality of light receiving windows or portions disposed on the same radius at the same phase, wherein the total sum of open areas of windows or portions of one phase is same as the other phase, wherein groups of light receiving windows or portions are disposed in a plurality on the same radius at the same phase.

Okutani et al. teaches the rotary encoder with a rotary disk receiving light from a light emitting element (Fig. 3, #1) to send to a light receiving element (Fig. 3, #5), wherein a fixed slit (Fig. 3, #4) is disposed between the rotary disk (Fig. 3, #3) and light receiving element so that a plurality of windows or portions is disposed to have a phase difference at different positions in the radial direction of the disk (Fig. 2).

Takagi et al. further teaches the light receiving windows or portions (Fig. 19, #66) further consisting of light receiving windows or portions as a group of a plurality of light receiving windows or portions disposed on the same radius at the same phase (Fig. 20, #66A), wherein the

Art Unit: 2882

total sum of open areas of windows of one phase is same as the other phase (Fig. 20, #66B and 66A).

Kuwahara et al. teaches groups of light receiving windows or portions disposed in a plurality on the same length of the same phase (col. 4, lines 65-69).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the encoder with the windows or portions having the phase difference of Okutani et al. with the device of Citizen, since one would be motivated have the phase difference to compare the lower and high-order data in adjacent pairs of the position data to correct the higher-order position data and thereby detect an absolute position to ensure a high-resolution and high-accuracy absolute position detection and prevent the occurrence of any detection error even if the relative positional accuracy of binary code patterns of varying orders or positions are comparatively low as shown by Okutani et al. (col. 2, lines 33-52).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the encoder with the windows or portions having the phase difference of Takagi et al. with the device of Citizen, since one would be motivated have windows of one of the embodiments of Takagi et al. to improve the utilization efficiency of the incident divergent light as shown by Takagi et al. (col. 2, lines 49-69 and col. 3, lines 1-12).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have groups of windows or portions at the same phase of Kuwahara et al. with the device of Citizen, since one would be motivated to incorporate this to provide a signal of greater amplitude as implied from Kuwahara et al. (col. 4, lines 65-69), which would be a more easily discernable signal.

Art Unit: 2882

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have groups of windows or portions at the same phase on the same radius with the suggested device of Citizen in view of Takagi et al., Okutani et al., and Kuwahara et al., since linear and rotary encoders are considered art-recognized equivalents in that they both are used to measure displacement (col. 4, lines 21-34) as implied from Kuwahara et al. It would have been within routine skill in the art to substitute one for another (col. 4, lines 21-34) as implied from Kuwahara et al. One would be motivated to incorporate on the same radius of an encoder (Fig. 2, #2) to provide a signal of greater amplitude as implied from Kuwahara et al. (col. 4, lines 65-69), which would be a more easily discernable signal.

### *Response to Arguments*

3. Applicant's arguments with respect to claims 2 and 5 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

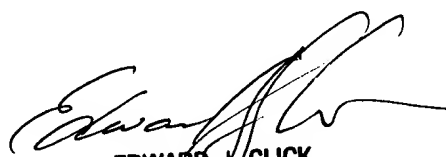
Art Unit: 2882

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk

June 19, 2003



EDWARD J. GLICK  
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